Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of the Commission's	)	
Rules to Establish a Single AM	)	ET Docket No. 92-298
Radio Stereophonic Transmitting	)	
Equipment Standard	)	

COMMENTS OF DELTA ELECTRONICS, INC.

Delta Electronics, Inc. is an electronics manufacturer located in Alexandria, Virginia which manufactures C-QUAM AM stereo exciters and modulation monitors, and specialized test equipment for the broadcasting industry such as impedance bridges and RF current indicating devices. The proposed adoption of the Motorola C-QUAM system as the standard for stereophonic AM broadcast radio services involves technology that is directly related to Delta's engineering expertise and to some of our current and future products.

Delta Electronics, Inc. is licensed by Motorola to manufacture C-QUAM Stereo exciters and monitors for compatible AM Stereo transmission by AM broadcast stations. The Model ASE-1, our first generation exciter, was type accepted in 1984. The Model ASE-2, our second generation exciter, was type accepted in 1991. Since 1984, Delta has supplied over three hundred stereo exciters and over two hundred and fifty monitors for broadcast stations located in the United States, Canada, Mexico, Australia, Brazil, South Africa, Japan and Thailand. In addition to supplying the equipment, Delta has either conducted or supported the installation of our equipment at these stations. Delta has also designed and developed the patented C-QUAM Synthesizer which uses direct digital

syntheses to produce precision stereo test signals for decoder integrated circuits and for receivers. Thus, over the last ten years, Delta has become a major supplier of AM Stereo exciters, monitors and test equipment and has acquired engineering expertise in the conversion of AM broadcast stations to stereophonic transmission.

Delta strongly supports the adoption of the Motorola C-QUAM system as the standard for stereophonic AM broadcast radio services. The Notice of Proposed Rule Making succinctly presents the rationale for adopting C-QUAM as the standard and does not require additional supporting comments. Delta wishes to comment concerning the proposed rule changes contained in Appendix B, and in particular, the requirement proposed for Section 73.128, AM Stereophonic Broadcasting.

First, Delta favors the use of suitable measurement equipment as specified in the proposed rule §73.128 (a) to determine that the transmissions conform to the specified modulation characteristics. The industry practice to date is use of a stereo modulation monitor as a standard to test the stereo transmission system. The proper operation of a stereo broadcast facility cannot be determined and maintained without such suitable test equipment.

However, it should be noted that a stereo modulation monitor does not directly measure the peak phase excursions in radians as described in the proposed rule §73.128 (c)(5) and §73.128 (c)(6). Furthermore, under proposed rule §73.128 (c)(5), the peak phase excursion is described as a maximum rather than an expected value derived from the equation. Certain characteristics present to some degree in all transmitters such as incidental phase modulation, incidental amplitude modulation and envelope distortion which

are beyond the control of broadcasters may cause, under normal operating conditions, the peak excursions to exceed this maximum value.

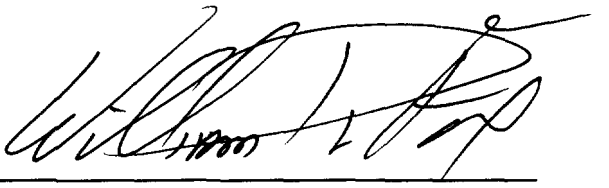
The statement in proposed rule §73.128 (a) about installation of the necessary measurement equipment implies ownership of such equipment for continuous monitoring rather than rental for the purposes of periodically assuring compliance. Since excessive phase modulation can cause adjacent channel interface in much the same manner as excessive amplitude modulation, the Commission should clarify this requirement to state that the maximum phase excursion is a limit which shall not be exceeded and, therefore, the necessary measurement equipment must always be present and operating.

Secondly, the nominal pilot level is specified as 5% L-R modulation in proposed rule §73.128 (c)(7) and in the equation of proposed rule §73.128 (c)(8). Since it is not possible to adjust the pilot level to the nominal value with -0% tolerance because of the accuracy limitations of the measurement equipment, the broadcaster would have to adjust the pilot level above the nominal level. Delta proposes that the pilot injection level be specified as a nominal 5% with a tolerance of +1%, -1%.

Additionally, Delta believes that the distortion specification for the pilot tone is unduly restrictive. Our type accepted Model ASE-2 has a pilot distortion level of approximately 2.5%. The highest pilot harmonic is 50 Hz and is greater than 60 dB below the carrier level. We believe that this is sufficiently low as to be unnoticeable. Since the type acceptance tests for AM Stereo exciters do not include pilot distortion, the modulation characteristics should be specified for compatibility with the existing type accepted and installed exciter equipment. Thus, Delta proposes that the total harmonic distortion of the pilot tone by specified as 3% or less.

The above comments are based on Delta's experience in the design, installation and operation of AM Stereo exciters and modulation monitors. They are directed toward ensuring high quality broadcast practices are maintained during AM Stereo transmissions but not requiring new measurement or signal purity capabilities in existing equipment.

Respectfully Submitted,



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April 2, 1993